REMARKS

Claims 1-16 are pending. Claims 1-7, 9 and 11-16 stand rejected. Applicant acknowledges with thanks the indication that claims 8 and 10 are allowable over the prior art if rewritten in independent form.

REJECTIONS UNDER 35 U.S.C. §102

Claims 1-7, 9, 12 and 14-16 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 4,513,190 to Ellett et al. Applicant respectfully submits that this rejection is overcome by the amendments to the claims for the reasons set forth below.

Applicants' invention, as recited in claim 1 (as amended), includes a feature which is neither disclosed nor suggested by Ellett et al., namely:

> ...a polymer coating disposed over at least a portion of a surface of the orifice. (Emphasis Added)

This feature is disclosed in applicants' specification, for example, page 4 lines 14-15, and originally included as part of claim 6. Applicants have cancelled claim 6 and incorporated the feature of claim 6 in amended claim 1.

According to amended claim 1, the bonding tool has polymer coating disposed over at least a portion of the orifice of the bonding tool.

The Office Action at page 2, paragraph 3 sets forth "Ellett et al. disclose a capillary bonding tool comprises [sic] of an orifice extending along the longitudinal axis, a coating disposed over at least a portion of a surface (figure 5). The coating is applied to an exterior of the working tip (figure 5). The coating being of a polymer (col. 4, lines 55-60) with a uniform thickness. (Emphasis added). Applicants respectfully disagree with this contention as it relates to the coating. Specifically, Ellett et al. discloses an "electrically conductive coating 46 is applied" to wire bonding capillary 45. Col. 4 lines 55-60 (emphasis added). Further, Ellett et al. requires that

the coating be conductive to provide a current path for an electrical spark discharge. *See*, for example, col. 4, lines 5-54. Thus, Ellett does not disclose or suggest that a polymer coating is formed on a capillary bonding tool.

In contrast, applicants' invention, as recited in claim 1, specifies that the bonding tool has a polymer coating disposed over a surface of the bonding tool.

It is because applicants have included the feature of disposing a polymer coating over a surface of the bonding tool that applicants are able to reduce the build-up of contamination and the subsequent embedding of this contamination in the bonding wire, which further leads to increased wear of the bonding tool. Ellett et al. does not achieve this advantage because Ellett et al. does not dispose a polymer coating over a surface of the bonding tool.

For the reasons set forth above, claim 1 is neither disclosed nor suggested by Ellett et al., thus, claim 1 is not subject to rejection under 35 U.S.C. §102(b) as being anticipated by Ellett et al. Applicants respectfully request that the rejection of claim 1 under 35 U.S.C. §102(b) be withdrawn and the claim allowed.

Claims 2-5, 7, 9 and 12-16 depend upon claim 1 and, thus, are likewise not subject to rejection for at least the reasons set forth above with respect to claim 1.

REJECTIONS UNDER 35 U.S.C. §103

Claim 13 is rejected under 35 U.S.C. §103(a) as being unpatentable over Ellett et al. in view of U.S. Patent 6,171,456 to Hadar et al. Applicants respectfully submit that this rejection is overcome by the amendments to the claims for the reasons set forth below.

Hadar is relied upon as disclosing "a coating on the orifice being in the range of 0.1 to 5 microns for the purpose of preventing the tool from distortion." Office Action at page 3, paragraph 6. Hadar does not disclose or suggest, however, disposing a polymer coating over a surface of the bonding tool. Thus, Hadar et al.

fails to make up for the deficiency of Ellett et al. Therefore, applicant request that the rejection of claim 13 under 35 U.S.C. §103(a) be withdrawn and the claim allowed.

At page 4, paragraph 7, the Office Action sets forth "Claims 8 and 10 are objected to as being dependant upon a rejected base claim but would be allowable if rewritten in independent form..." Accordingly, Applicants have rewritten claims 8 and 10 in independent form. Allowance of claims 8 and 10 is respectfully requested.

Claim 28 is added. Basis for this claim may be found in applicants' specification at page 4, lines 3-25. This claim does not add new matter. Applicants respectfully request the entry and examination of claim 28.

In view of the amendments and remarks set forth above, Applicants respectfully submit that the above-identified application is in condition for allowance which action is respectfully requested.

Respectfully Submitted,

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Enclosures: Version with markings to show changes made
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The Assistant Commissioner for Patents is hereby authorized to charge payment to Deposit Account No. 18-0350 of any fees associated with this communication.

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Mary K MacMillan

VERSION WITH MARKINGS TO SHOW CHANGES MADE

CLAIMS:

1. (Amended) A bonding tool for bonding a wire to a substrate, the bonding tool having a body and a working tip coupled to one end of the body, and comprising:

an orifice extending along a longitudinal axis of the body and the working tip; and

a polymer coating disposed over at least a portion of a surface of the orifice.

7. (Amended) A capillary bonding tool according to claim 1, wherein the coating is at least one of i) a polymer, ii) an Alumina, iii) Si_3N_4 iv) silica v) a combination of 12% silica and 88% Alumina, and vi) a Diamond like ~~Silica~~coating (DLC).

8. (Amended) A ~~capillary~~ bonding tool ~~according to claim 1~~for bonding a wire to a substrate, the bonding tool having a body and a working tip coupled to one end of the body, and comprising:

an orifice extending along a longitudinal axis of the body and the working tip; and

a coating disposed over at least a portion of a surface of the orifice,

wherein the coating is a polymer disposed along an interior surface of the orifice and one of i) an Alumina, ii) Si_3N_4, iii) silica, iv) a combination of12% silica and 88% Alumina, and v) a Diamond like ~~Silica~~ coating (DLC) disposed along an exterior portion of the orifice.

10. (Amended) A ~~capillary~~ bonding tool ~~according to claim 1~~for bonding a wire to a substrate, the bonding tool having a body and a working tip coupled to one end of the body, and comprising:

an orifice extending along a longitudinal axis of the body and the working tip; and

a coating disposed over at least a portion of a surface of a surface of the orifice,

wherein the coating has a substantially uniform thickness of up to about 2.0 microns.

Claim 28 has been added